Unit 17 Denmore Industrial Estate, Denmore Road, Bridge of Don, Aberdeen AB23 8JW

User Manual
Greasehead
145-2138-HH0

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Revision History

Issue, Release Date	Description
Rev A, 20 Jun 08	Initial Issue
Rev B, 12 Dec 08	Parts list and Spares List Change
Rev C, 02 Apr 09	Parts Update
Rev D, 26 May 11	T-Seal Material Cx to H80

Safety

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force.

All pressure equipment has a particular pressure rating and care must be taken to ensure that no item is used in a situation that may cause its working pressure to be exceeded.

All personnel involved in pressure testing must be formally trained, competent and utilising the appropriate PPE.

Safe-Lok devices, where fitted, should be checked for positional security to avoid unnecessary movement of the collar

Ensure the identification band/plate is fitted and is displaying the correct information as per the Tag Sheet/Index

This equipment and the equipment it is attached to is heavy never position yourself below a suspended load

Figure 1: Grease Head Safety

1 Introduction

1.1 General

Phuel has transformed the Greasehead functionality with the innovation of using what are essentially small quick union connections on the flowtube housings. This vastly improves, eases and speeds up the redressing operations and allows the operator to align his hydraulic connection with ease. The design utilises standard flowtubes and comes complete with ball check valves and chemical injection facilities. The Phuel Greasehead is designed for up to 10,000psi working pressure, 15,000psi test pressure H2S service. Higher working pressures can be obtained if required

This user manual serves as an introduction to the equipment and contains the relevant specifications, operation, planning and maintenance instructions, parts list and drawings.

1.2 Product Identification

Phuel products are identified by a unique serial number that facilitates full product traceability. Each product is supplied with a documentation pack that contains product certification and material/inspection reports. The serial number is always etched on the surface of the product but can sometimes be difficult to find or read after painting. A customer identification number is also included to allow the customer to track the asset in their system.

A stainless steel band secures the nameplate tag that is stamped with the information shown below. This tag should be located in the first instance to ensure that this manual refers to the correct equipment.

PHUEL OIL TOOLS LTD
DESCRIPTION & SIZE
CUSTOMER ID No
PHUEL ID No 06-XXX-XX
MWP & SERVICE
TEST DATE

2 Technical Specification

Part Number	145-2138-HH0
Connections	5 ¾'' Otis Type ½'' NPT
Maximum Working Pressure	10,000 Psi
Design Test Pressure	15,000 Psi
Service	H2S
Weight	235 lbs/106.59Kg
Overall Length (A)	116.50''/2.96M
Make Up Length (B)	112.59''/2.86M

Table 1:Technical Data

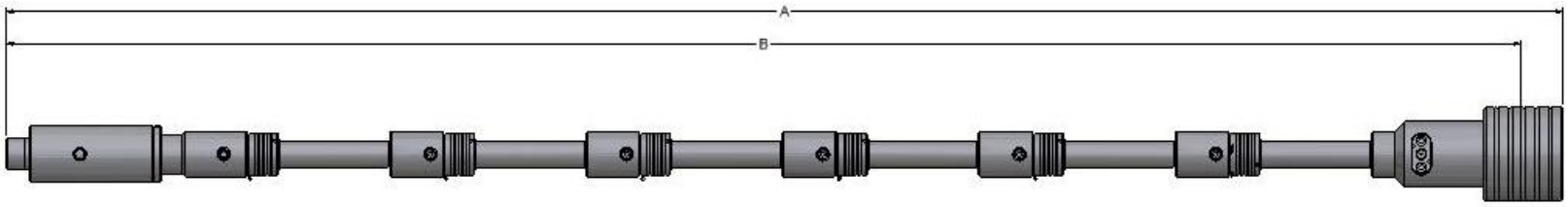


Figure 2: Grease Head

3 Technical Description

3.1 Fast Collar

The fast collar is designed to allow quick replacement of the folwtubes either due to a requirement for a line size change or for repair. The fast collar is released by removal of the circlip and unscrewing the collar from the connector sub allowing access to the flowtube housing and flowtube.

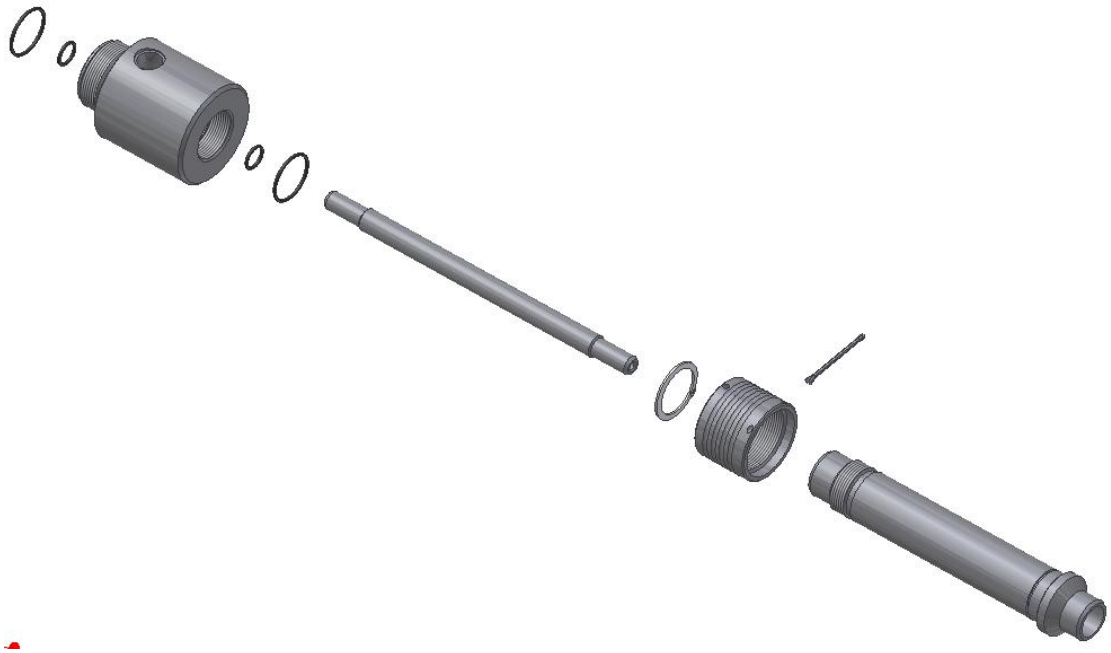


Figure 3: Fast Collar

3.2 Check Valve Saver Sub

The saver sub provides the ability to change a damaged pressure fitting without repairing or replacing a major component. The saver sub is held in place by two socket head cap screws and is sealed by means of an ‘O’-ring.

The Saver sub can be replaced with a blank version to avoid the need to fit a pressure-blanking plug that would otherwise protrude from Greasehead assembly.

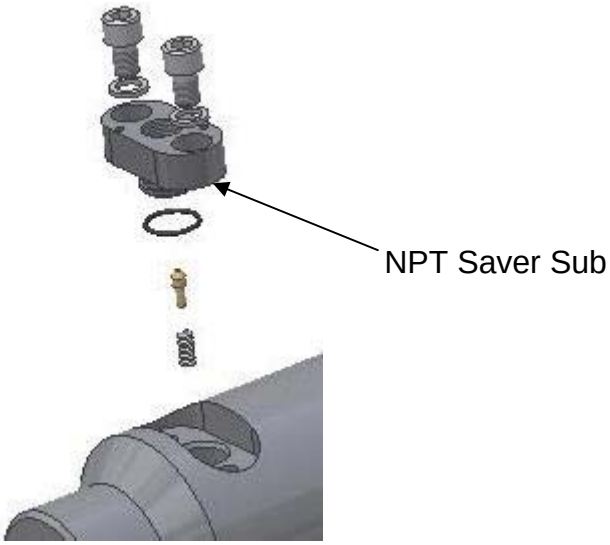


Figure 4 : NPT Saver Sub

4 Operation

All operations to be carried out by suitably qualified and competent personnel

4.1 Lifting

Thread protectors should always be fitted when lifting or moving the greasehead.

4.1.1 Vertical

The greasehead should be lifted with a suitable lifting clamp or sling that is rated for the total lifting load. Following the instructions for the clamp or sling being used.

If practical leave the thread protectors fitted until ready to make up the connections.

4.1.2 Horizontal

Suitable slings can be wrapped around either end of the greasehead to allow horizontal lifting for means of transportation or fitting. Always pay attention to the centre of gravity and do not continue to lift if the greasehead is not sitting horizontal as it might slip through the slings.

4.2 Making Up the Greasehead

- With the greasehead hanging vertically above the mating connection, remove the thread protectors of both ends.
- Lift the collar and inspect the o-ring for any signs of damage and apply grease if required
- Inspect the mating bore and thread for any signs of damage or debris and clean and grease if necessary
- Lower the connection and centralise to ensure that the o-ring is not loaded on one side. Ensure that the connection has stabbed fully home and that there are no signs of o-ring debris.
- Lower the collar and make up the threads.
- Store the thread protectors in a safe place for use later.

4.3 Breaking the connection

- Ensure that all pressure is bled off. The free movement of the collar is an indication of this.
- Unscrew the collar fully

- Lift up the greasehead to break the connection. Visually inspect the o-ring and male end to make sure that no damage has occurred. Report if necessary.
- Fit the thread protector to the bottom of the greasehead at this time to prevent damage when moving.

4.4 Replacing the Saver Sub

It is not expected that the saver sub would need to be replaced during normal operations but if damage occurs to a pressure fitting or a leak is found during pressure testing then this procedure should be followed.

- Ensure that the pressure is bled off.
- Do not remove the pressure fittings at this time as they can be used to provide grip to remove the plug.
- Remove the two socket head cap screws and lock washers. (If they appear unusually tight or difficult to move re-check that the pressure has been removed).
- Grip the pressure fitting and pull out the saver sub with a pulling and rocking motion. If the pressure fitting has been removed already then two ¼-20 UNC screws (not supplied) can be used to jack out the sub.
- Inspect the o-ring for signs of damage and replace if necessary
- Inspect the seal bore for signs of damage and report if necessary
- If required, remove the pressure fitting – clean and inspect the pressure port.
- To re-fit the sub apply grease to the o-ring and seal bore.
- Push the sub into the bore by hand as far as possible, ensuring that the part is centralised in the bore.
- Fit the screws and washers and tighten to drive the o-ring into the bore. Make up each screw equally to ensure that the sub does not become twisted.
- Fully tighten the screws.

4.5 Pre Job

- Ensure thread protectors are fitted
- Check maintenance record sheet and ensure the equipment has been maintained by competent personnel
- Check all certification is in date
- Confirm information band is fitted and correct
- Ensure equipment is suitable for the maximum working pressures and services involved
- Ensure visible ‘O’ rings are seated correctly and there are no signs of damage
- Ensure threads are clean
- Inspect for signs of damage

- Pressure test to 1.2x the maximum well pressure

4.6 During Job

- Avoid excessive movement

4.7 Post Job

- Inspect for signs of damage
- Ensure threads are clean
- Ensure thread protectors are fitted

5 Maintenance

All maintenance to be carried out by suitably qualified and competent personnel

5.1 Introduction

Regular maintenance of the equipment using Phuel redress kits or Phuel approved parts is essential to its continued safe operation. Ensure that the pre and post job operating procedures are followed and that maintenance records are kept.

5.2 Schedule

The maintenance schedule may be governed by international or company standards and the following is considered to be the minimum requirements.

5.2.1 Pre & Post Job

Refer to Section 4.5 and Section 4.7 for details

5.2.2 Yearly

- Disassemble Greasehead (see 5.5.1) clean and degrease all components
- Inspect the condition of all sealing surfaces and surface coatings
- Re-coat threads and sealing surfaces if necessary. If in doubt contact Phuel Oil Tools Ltd
- Replace all elastomeric seals with items from redress kit (see spares Table 4)
- Regrease components
- Re-assemble (see 5.5.2)
- Pressure test to maximum working pressure in accordance to testing procedure (see 6)
- Inspect paint work and repair as necessary

5.2.3 Five Yearly

- Yearly Maintenance (plus the following)
- Carry out 100% surface NDE on all surfaces
- Pressure test to test pressure witnessed by certifying authority

5.3 Safety

- Many of the components are heavy and should not be lifted without lifting aids.

- Ensure all pressure testing is carried out in the appropriate testing area by suitably qualified personnel.
- Wear appropriate personal protective equipment.
- Do not over exert yourself while using torque wrenches. Use appropriate mechanical advantages when available.
- Ensure that all tools and equipment are in good condition and are suitable for the intended use.
- Clear up any fluid spills immediately to avoid slips.

5.4 Tools

The following tools are required:

- Memac Chain Wrench (No2 with 14'' chain)
  Other pipe wrenches may be used but will mark equipment
- 3/8 hex Allen key
- 7/8'' Spanner (If NPT Plug to be fitted)
- Wire Brush

5.5 Redress Procedure

5.5.1 Dis-Assembly

- Remove bottom sub
- Remove check valve port, check valve, spring and collar
- Remove retaining ring, ball cup, ball bearing and check valve seat
- Remove circlips from behind fast collars
- Undo fast collar from packing housing and remove packing housing and piston housing
- Remove piston housing from packing housing
- Remove split packing sub, wiper element and interlocking rings from packing housing
- Release spring retainer and remove piston spring and piston from piston housing
- Remove flow tube housings from connector subs by undoing fast collars
- Remove flow tubes from housings
- Remove and discard all 'O' rings and 'T' seals
- Clean and degrease all components
- Fit thread protectors and shipping cap plugs

5.5.2 Re-Assembly

- Remove thread protectors and shipping cap plugs
- Inspect all threads for damage and clean as required using a wire brush
- Fit 'O' rings to the bottom sub, connector subs, check valve seat and check valve port

- Fit ‘T’ seals to the piston
- Grease ‘O’ rings and OD’s of flow tube housings
- Insert check valve seat, ball bearing and ball cup into base of bottom sub then fit retaining ring
- Fit collar over bottom sub
- Fit fast collar over flow tube housing
- Fit flow tube housing to bottom sub and tighten
- Insert flow tube into housing
- Fit connector sub to flow tube housing and screw fast collar into position. Once tight fit circlip behind fast collar
- Repeat the procedure for the flow tube housing, flow tubes and connector subs until 6 flow tubes are fitted.
- Grease piston ‘T’ seals
- Fit piston, piston spring and spring retainer to the piston housing
- Make up interlocking rings and fit to packing housing
- Insert wiper element into packing housing
- Insert split packing sub into piston housing and fit packing housing to bottom of piston housing
- Insert top flow tube housing into packing housing, tighten fast collar and fit circlip
- Fit check valve spring and valve to bottom sub
- Apply grease to check valve port ‘O’ ring and fit to bottom sub using 2 screws and washers

5.6 Maintenance Record Sheet

Date Performed	Type of Maintenance	Performed By	Verified By	Comments

Table 2: Maintenance Record

6 Testing

All testing is to be carried out in the designated test area and by suitably qualified and competent personnel.

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force.

- Fit appropriate test caps and blanking plugs
- Fill with testing fluid bleeding off any air within the system
- Apply a pressure of 500 psi and ensure pressure holds for a minimum of 10 minutes
- Increase pressure to 10,000 psi (Maximum Working Pressure), allow to stabilise and maintain this pressure until it is evident there are no apparent leaks. (Testing to be carried out to Test pressure when decreed by maintenance schedule)
- Bleed off pressure, drain test fluid and dry
- Remove test caps
- Apply coating of de-watering solution to protect the bore and threads
- Fit thread protectors and shipping cap plugs

On completion of all maintenance ensure the maintenance record sheet (Para 5.6) is completed

7 Parts List and Drawings

Item Number	Part Number	Quantity	Description
1	145-2116-480	1	PISTON HOUSING
2	145-2117-480	1	PISTON
3	145-2118-480	1	SPRING RETAINER
4	145-2119-480	1	PACKING HOUSING
5	145-2120-480	6	FAST COLLAR
6	145-2121-480	6	FLOW TUBE HOUSING
7	145-2122-480	5	CONNECTOR SUB
8	145-2123-480	1	BOTTOM SUB
9	100-1984-480	1	COLLAR
10	145-2176-480	1	CHECK VALVE PORT
11	145-2126-B21	1	CHECK VALVE SEAT
12	145-2127-PTF	1	BALL CUP
13	145-2124-W31	1	SPLIT PACKING SUB
14	145-2125-W31	2	INTERLOCKING RING
15	145-2128-B21	1	RETAINING RING
16	145-2141-N90	1	WIPER ELEMENT (GIH1009-7-E)
17	145-2177-STL	1	PISTON SPRING
18	145-2180-STL	6	EXTERNAL CIRCLIP (DSH-50)
19	145-2181-316	1	BALL BEARING 0.750 DIA
20	802-2182-H80	1	PISTON T-SEAL (2.265)
21	802-2183-H80	1	PISTON T-SEAL (3.250)
22	801-0210-V90	12	O-Ring - B.S Size 210
23	801-0223-V90	6	O-Ring - B.S Size 223
24	801-0119-V90	1	O-Ring - B.S Size 119
25	801-0224-V90	7	O-Ring - B.S Size 224
26	801-0342-V90	1	O-Ring - B.S Size 342
28	100-2114-PEK	1	CHECK VALVE SEAL
29	145-2185-X75	1	CHECK VALVE SPRING
30	SHC-0583-HTS	2	Soc Hd Cap Size 1/2 Length 0.75 in
31	WNL-0580-STL	2	Nord Lock Washer (M12)
32	145-2215-304	6	SPLIT COTTER PIN 1/8 X 3" LONG
100	910-2157-N66	1	5.75-4 ACME MALE PROTECTOR
101	910-2184-N66	1	THREAD PROTECTOR 2" NPT
102	910-2186-N66	8	1/2" SHIPPING CAP PLUG

Table 3: Parts List

Note: Thread protectors (items 100, 101 and 102) not shown on Assembly Drawing

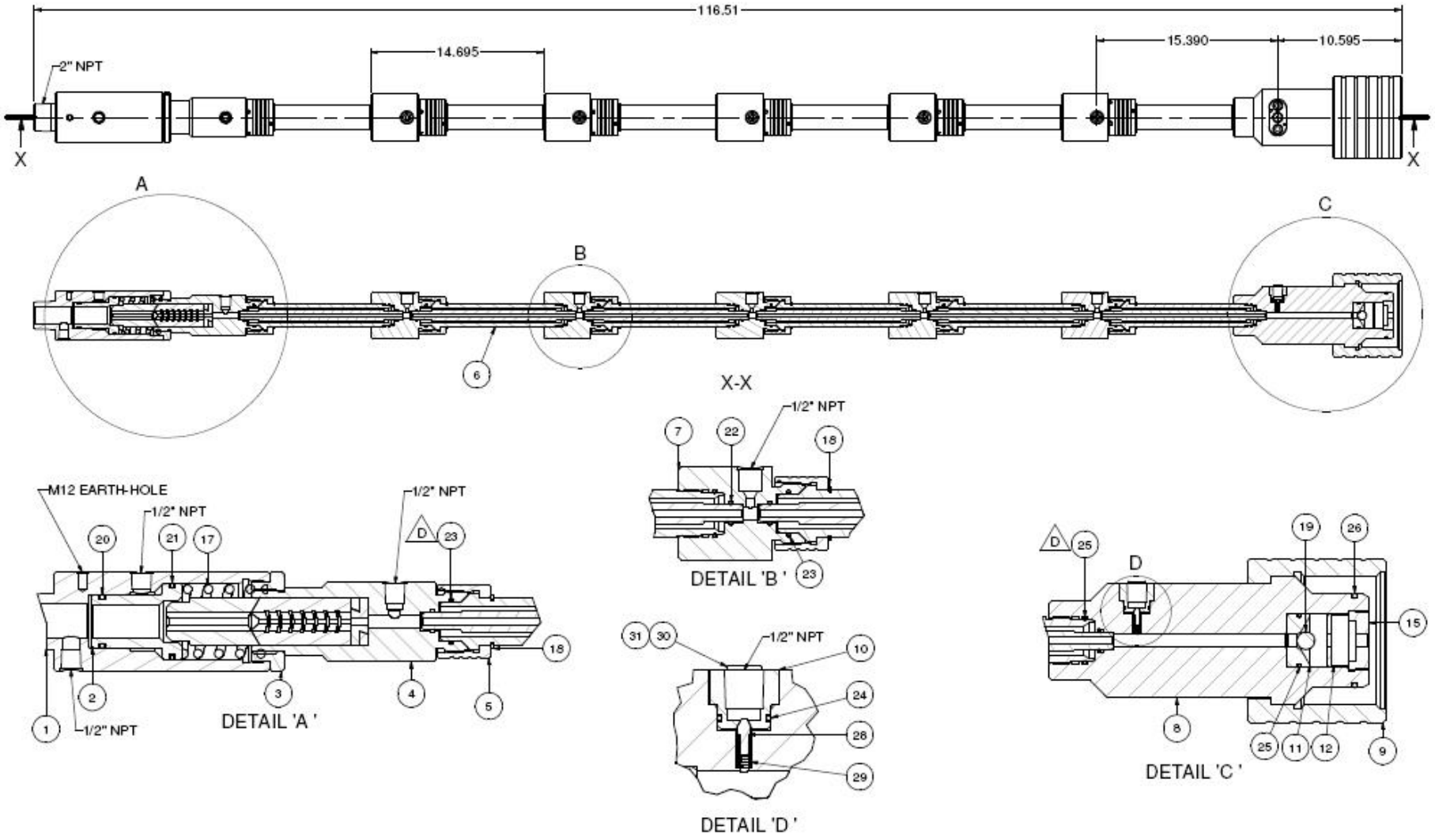
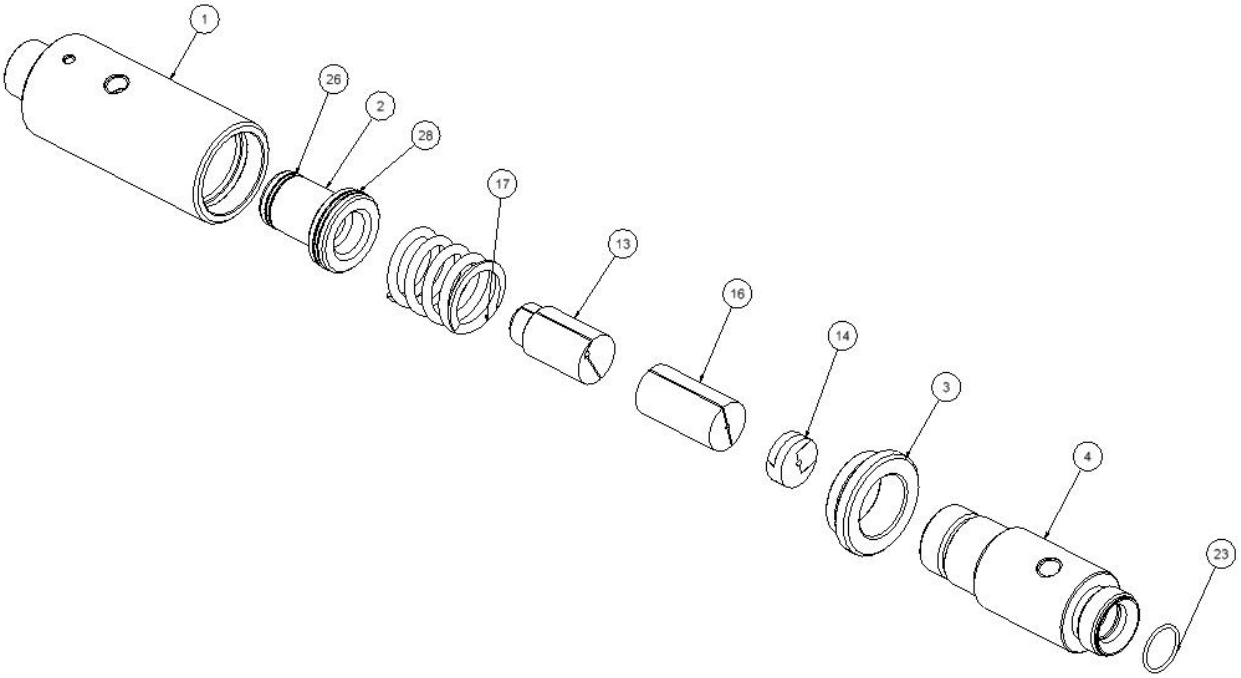


Figure 5: Grease Head Assembly 1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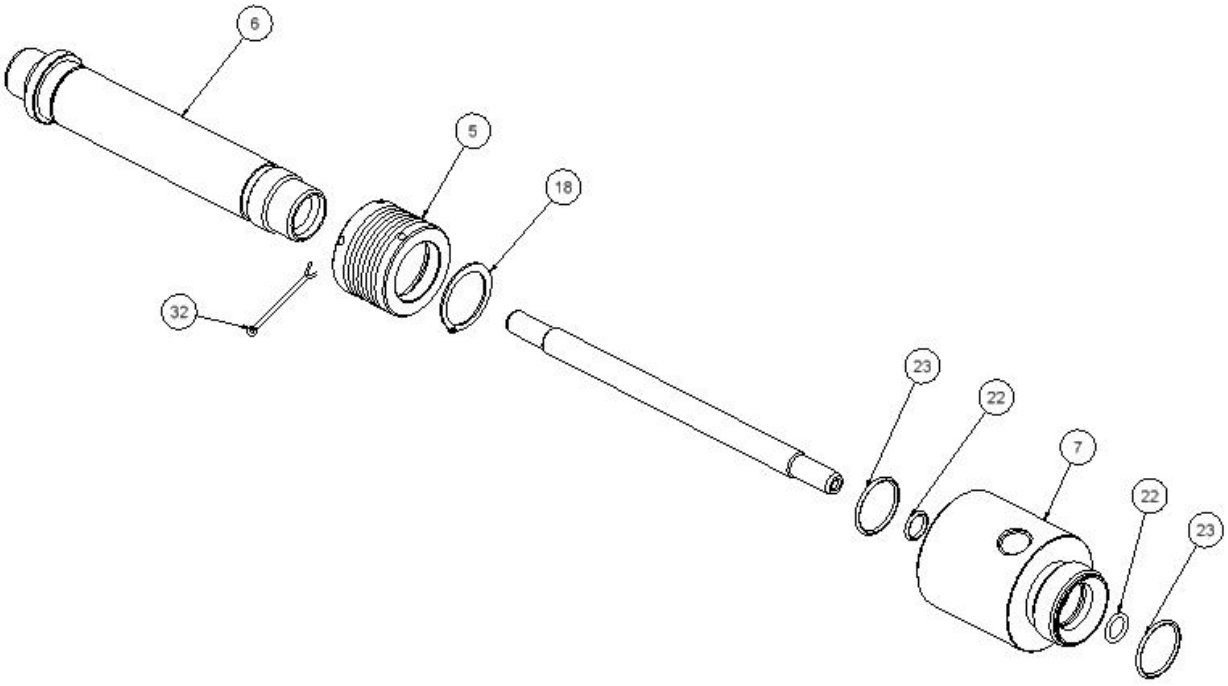
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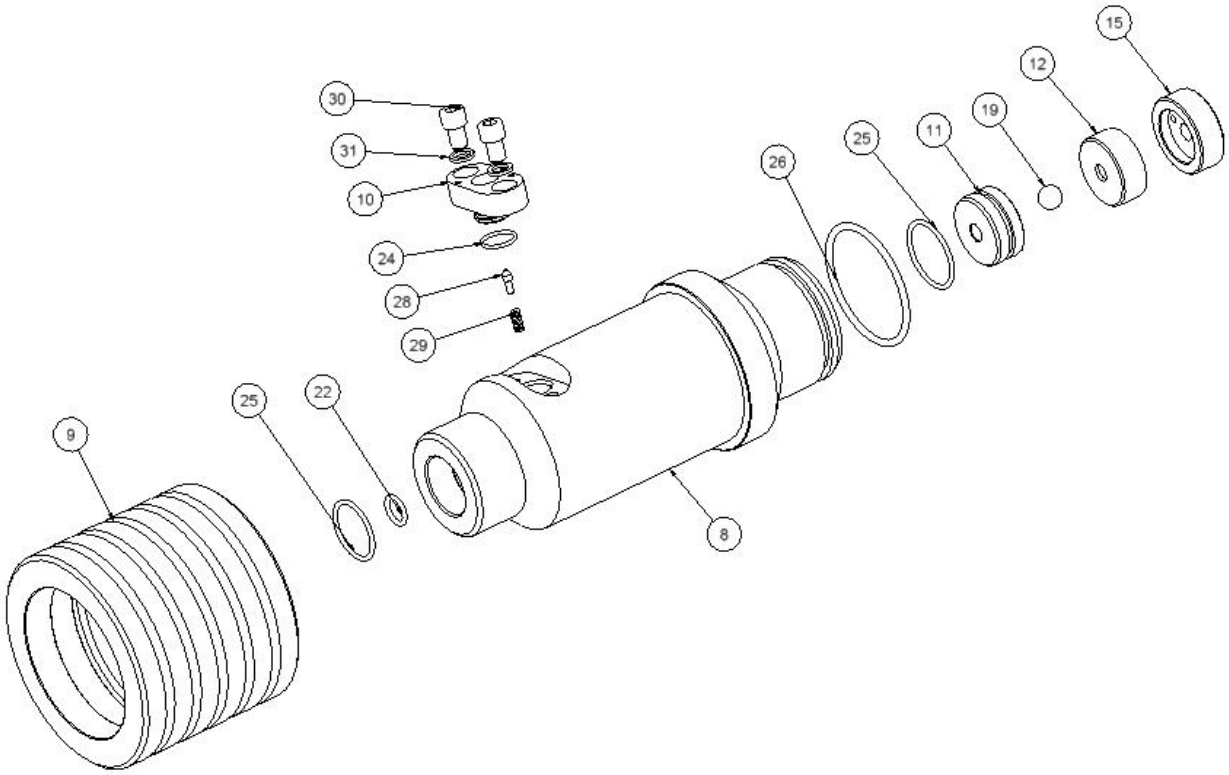

Figure 6: Grease Head Assembly 2

8 Spares

Use only spares supplied or approved by Phuel Oil Tools Ltd.

It is recommended that sufficient quantities of the following spares be maintained to ensure that the equipment is always available when required.

Elastomeric spares are supplied in Viton material as standard. Many other materials are available please specify when ordering.

Part No	Qty	Description	Comments
802-2182-H80	1	PISTON T-SEAL (2.265)	
802-2183-H80	1	PISTON T-SEAL (3.250)	
801-0210-V90	12	O-Ring - B.S Size 210	
801-0223-V90	6	O-Ring - B.S Size 223	
801-0119-V90	1	O-Ring - B.S Size 119	
801-0224-V90	7	O-Ring - B.S Size 224	
801-0342-V90	1	O-Ring - B.S Size 342	
100-2114-PEK	1	CHECK VALVE SEAL	

Table 4 : Redress Kit Part No RDK-2138-HV0

8.1.1 Individual Items

Individual items may be ordered as required using the part number specified

Note: O-Rings conform to industry standards and may be substituted with those from other suppliers -– **at the sole risk of the user**.

8.1.2 Supporting Equipment

The following test fixtures are available for order directly from Phuel Oil Tools Ltd

Part No.	Item Description	Comments
205-2105-480	Blank Test Sub	
145-2139-480	Flow Tube Size 326	
145-2140-480	Flow Tube Size 335	

Table 5 : Supporting Equipment